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Jupyter Notebook installation

Why do we need it?

Jupyter Notebook is a great tool for working with python. Qiskit library, framework for working with quantum computers and developing quantum algorithms, is used with python.

1. **Interactive Development:** Jupyter Notebooks allow you to write and execute code in an interactive environment. You can run small chunks of code (cells) one at a time, which makes it easier to test, debug, and understand your quantum circuits and algorithms.
2. **Immediate Feedback:** When you run a cell in a Jupyter Notebook, you immediately see the output below the cell. This immediate feedback loop is helpful for learning and experimentation, allowing you to see the results of your quantum circuits and make adjustments in real-time.
3. **Rich Text and Documentation:** Jupyter Notebooks support Markdown, which lets you include explanatory text, equations (using LaTeX), images, and links alongside your code.
4. **Visualization:** Quantum circuits and their results can be complex. Jupyter Notebooks integrate well with various visualization libraries, including those in Qiskit, to display quantum circuits, state vectors, histograms of measurement outcomes, and more.

Prerequisites

Before installing the Jupyter Notebook, we need to have Python installed. If you haven't installed Python yet, visit https://www.python.org/downloads/ and download the latest version.

Installation

- You can find instructions on how to install Jupyter Notebook here: Project Jupyter | Installing Jupyter
- Alternatively, you can install Conda first and then download Jupyter Notebook. Conda has a lot of tools, and they can be useful in the future.
    1. Download Anaconda Distribution | Anaconda go here and download Conda.
    2. If conda is installed correctly (might need a logout and login, or restart), you should be able to see the output when typing 'conda' into your terminal.

        ```
        conda
        ```
    3. Open anaconda command prompt and type the following:

        ```
        conda install pip
        ```
    4. You can install Jupyter by opening Anaconda and downloading it from there or type in the command prompt:

        ```
        conda install -c conda-forge notebook
        conda install -c conda-forge nb_conda_kernels
        ```
    5. Install extensions:

        ```
        conda install -c conda-forge jupyter_contrib_nbextensions
        ```

6. Install Jupyter Lab (if not installed):

```
conda install -c conda-forge jupyterlab
conda install -c conda-forge nb_conda_kernels
```

Launching and using Jupyter Notebook

To open Jupyter Notebook, just type in the Anaconda command prompt:

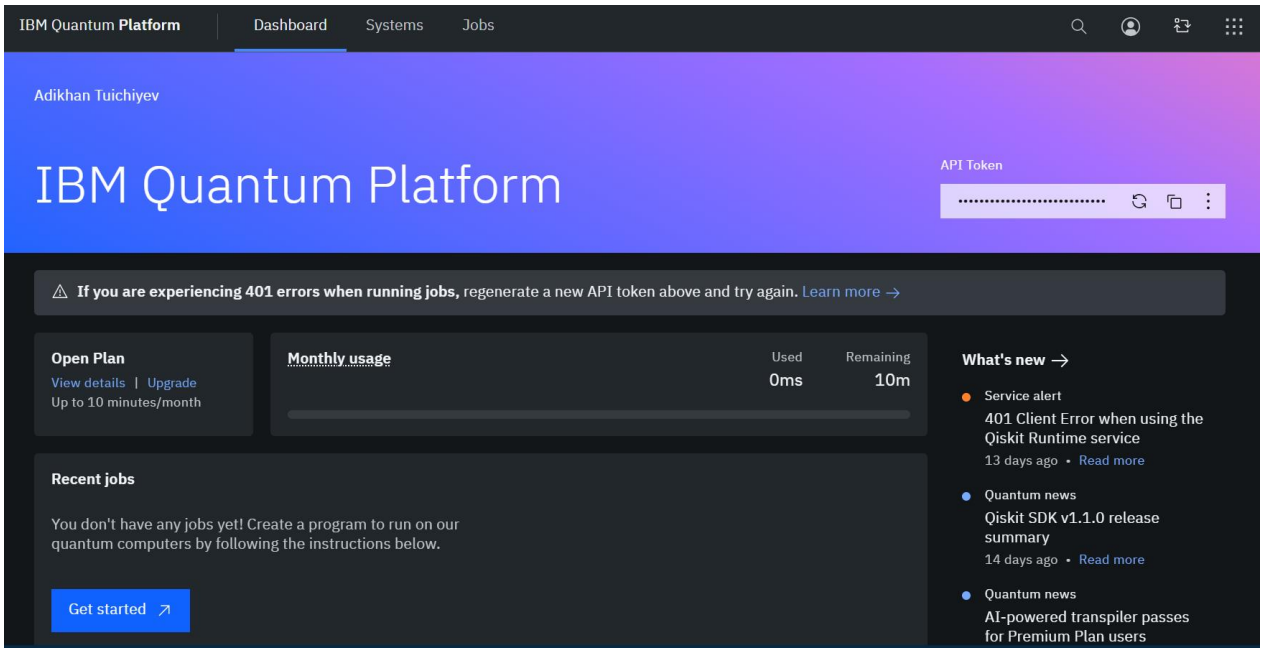
```
jupyter notebook
```

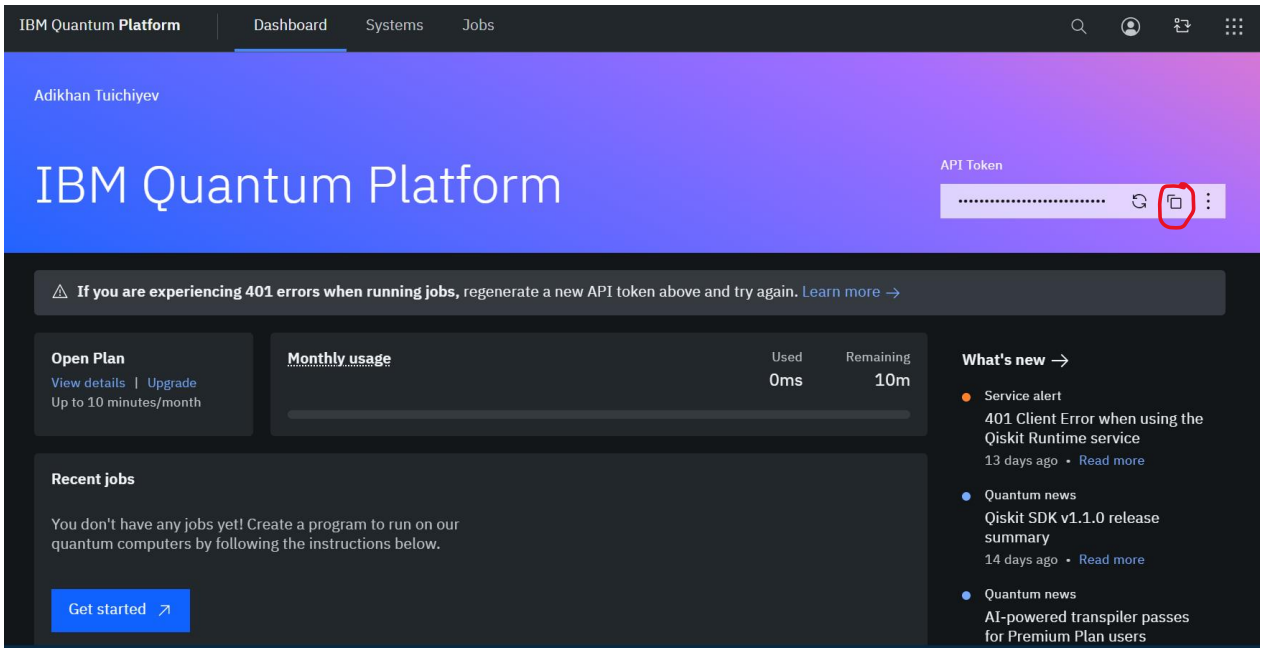
You can watch this tutorial(Don't pay attention to the name of the video) to understand how to work with this tool: [How To Use Jupyter NoteBook For Data Analysis (Beginner Tutorial) (youtube.com)]

Getting API token for Qiskit

In order to be able to run programs on quantum computers, we need to get API token. Let's do that step by step.

1. [IBM Quantum Platform] – go here and log in or register (if you don't have an account).
2. Go to the "Dashboard" section. On the top right you will find label "API Token".



3. 

Click circled button and save this token somewhere.

We will need this token later.